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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/065,595 | 11/01/2002 | Darin R. Okerlund | 125974 | 2440 |
| 23413 | 7590 | 12/13/2005 | EXAMINER | |
| CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 | | | SMITH, RUTH S | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3737 | |

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,595

Applicant(s)

OKERLUND ET AL.

Examiner

Ruth S. Smith

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 16-18, 20-28, 30 and 34-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-18, 20-28, 30 and 34-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 3, 2005 has been entered.

Claim Rejections - 35 USC § 112

Claims 1-13,16-18,20-28,30,34-37,40,42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. With regard to the 3D model generated and stored, the specification fails to set forth that the model can be **any combination** of the examples set forth.

Claim Objections

Claims 1-13,16-18,20-28,30,34-37,40-42 are objected to because of the following informalities: In claims 1,16, it is unclear as to what structure/steps applicant is referring to by the recitation of "at least one of the foregoing image formats". In claims 1,16, "each image slice" lacks antecedent basis. In view of the language set forth in claim 38, it is unclear as to how the language set forth in claim 41 further limits the base claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6,9-13,16-18,20-28,30,37,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Keidar in view of Subramanyan et al, Chen et al (WO 96/10949), Ockuly and Farsaie or Migdal et al. Keidar discloses a system and method for generating a 3D model for use in cardiac interventional planning procedures (such as ventricular pacing planning or atrial fibrillation planning) including everything except for a database, an operator interface and a post-processing system for inserting a geometrical marker and selecting a viewable parameter and the specific type of 3D model set forth. Subramanyan et al disclose a method and apparatus for interventional procedure planning (such as placement of a stent) using a user interface (44) and a post-processing system (40, 48) for marker (72, 280) placement and viewable parameter selection (fig. 9-1 1). Subramanyan et al also disclose saving a viewable image, anatomical landmark, etc. (34, 46) to be exported to user interface (44). See fig. 1. Subramanyan et al further disclose wherein the post processing software further performs image rendering (242) and vessel tracking along a centerline (82). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to employ the user-interface and post-processing software of Subramanyan et al. in the invention as taught by Keidar to enable vascular tracking and visualization in 3D from multiple directions (Subramanyan, col. 2 lines 25-27) and to allow intuitive graphical feedback and interaction with the physician (Subramanyan, col. 2 lines 39-42) when administering treatment in regions which are difficult to mentally visualize. Furthermore, although Subramanyan et al disclose saving the image data, a database is not addressed explicitly. Chen et al disclose a system and method for anatomical visualization of structures demonstrating that image databases are well known.

Therefore it would have been obvious to one skilled in the art to have further modified Keidar such that the image data is saved to an image data base as is a well known expedient in the art. It is well known in the art that interventional procedures are performed in the heart whereby the coronary sinus is involved in the procedure. Ockuly discloses the use of a coronary sinus catheter for providing an interventional procedure such as pacing or fibrillation. It would have been obvious to one skilled in the art to have further modified Keidar et al such that the cardiac image data obtained includes data regarding the coronary sinus such that a well known interventional procedure involving the cardiac sinus can be planned and carried out. Providing a 3D model that is a wire mesh model is well known in the art as shown, for example, in Farsaie and Migdal et al. It would have been obvious to one skilled in the art to have further modified Keidar such that the 3D model provided is a wire mesh model. Such a modification merely involves the substitution of one well known type of 3D model for another.

Claims 7,8,34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keidar in view of Subramanyan et al, Chen et al (WO 96/10949), Ockuly and Farsaie or Migdal et al as applied to claims 1,16 above, and further in view of Liu et al. Liu et al disclose angiographic imaging which includes vessel tracking. The vessel tracking includes determining whether an arterial phase or a venous phase contrast study is under review. Liu et al disclose that the vessel segmentation can be performed using any known post-processing technique. In the absence of any showing of criticality or unexpected result, the specific segmentation technique used would have been an obvious design choice of known equivalents in the art. It would have been obvious to one skilled in the art to have further modified Keidar to include vessel tracking which allows one to determine whether an arterial phase or a venous phase contrast study is being conducted in order to locate the vessel of interest.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keidar in view of Subramanyan et al, Chen et al (WO 96/10949), Ockuly and Farsaie or Migdal et al as applied to claim 1 above, and further in view of Pan et al. The use of helical scan data acquisition with gated reconstruction is a well known process for acquiring cardiac

image data as seen for example in Pan et al ('894). It would have been obvious to one skilled in the art to have further modified Keidar such that the cardiac data acquisition comprises helical scan data acquisition with gated reconstruction as is well known in the art. Such a modification merely involves the substitution of one known means for acquiring cardiac image data for another.

Claims 38,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al in view of Langberg et al or Foltz et al. Liu et al disclose angiographic imaging which includes vessel tracking. The vessel tracking includes determining whether an arterial phase or a venous phase contrast study is under review. Liu et al disclose that the vessel segmentation can be performed using any known post-processing technique. It is well known in the art to image the coronary sinus. Examples of such are seen in Langberg et al and Foltz et al. It would have been obvious to one skilled in the art to have modified Lui et al such that the vessel being tracked involves the coronary sinus. Such a modification merely involves the selection of a well known area of the body to be imaged for diagnostic purposes.

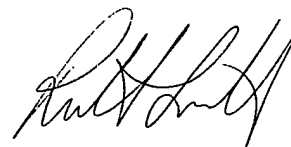
Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lui et al in view of Langberg et al or Foltz et al as applied to claim 38 above, and further in view of Subramanyan et al, Chen et al (WO 96/10949). Lui et al discloses that angiography enables surgical planning and treatment. Subramanyan et al disclose a method and apparatus for interventional procedure planning (such as placement of a stent) using a user interface (44) and a post-processing system (40, 48) for marker (72, 280) placement and viewable parameter selection (fig. 9-11). Subramanyan et al also disclose saving a viewable image, anatomical landmark, etc. (34, 46) to be exported to user interface (44). See fig. 1. Subramanyan et al further disclose wherein the post processing software further performs image rendering (242) and vessel tracking along a centerline (82). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to employ the user-interface and post-processing software of Subramanyan et al. in the invention as taught by Lui et al to enable vascular tracking and visualization in 3D from multiple directions and to allow intuitive graphical feedback and interaction with the physician. Furthermore, although Subramanyan et al

disclose saving the image data, a database is not addressed explicitly. Chen et al. discloses a system and method for anatomical visualization of structures demonstrating that image databases (e.g., 10) are well known. Therefore it would have been obvious to one skilled in the art to have further modified Lui et al such that the image data is saved to an image data base as is a well known expedient in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruth S. Smith whose telephone number is 571-272-4745. The examiner can normally be reached on M-F 7:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ruth S. Smith
Primary Examiner
Art Unit 3737

RSS